

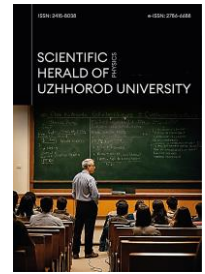
Scientific Herald of Uzhhorod University

Series "Physics"

Journal homepage: <https://physics.uz.ua/en>

Issue 56, 2817–2823

Received: 24.09.2024. Revised: 18.11.2024. Accepted: 26.12.2024



The matter of space-time has increased its density and mass in the zone of the Earth

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Abstract

Relevance. The relevance of this study lies in its offer of a new approach to measuring and analysing the effects of gravitational forces of spacetime matter for the first time in the world using gravity receivers. The study presented a new understanding of the complex interactions between gravity, density, and mass of spacetime matter along the latitude and meridian of the Earth, which were measured for the first time by gravity receivers.

Purpose. The purpose of this work was to investigate the properties of the gravitational field of spacetime in terms of its latitude and longitude, as well as to determine the shape of the gravitational wave on the Earth's surface. For this, gravity receivers were constructed, which are levers with arms of different lengths mounted on a sharp support. One gravity receiver was located along the Earth's latitude in the east-west direction, while the other along the meridian in the south-north direction.

Methodology. With these two gravity receivers, one can observe the change in the position of the levers relative to the horizon depending on the magnitude of the gravitational moments associated with changes in the spacetime density in latitude and longitude on the Earth's surface. The specific feature of gravity receivers is that they can rotate to a certain angle without friction on a sharp support and are very sensitive to microscopic changes in the mass and density of spacetime in the volume of the globe.

Results. The moments of space-time gravity acting along the Earth's latitude vary slightly in some months, but in other months they change a lot. This is especially true for 2024, when the torsional moments increased from 0.65 Nmm to 3.4 Nmm. This is explained by the fact that the mass and density of spacetime began to increase in the volume of the Earth in April 2023 and systematically continued this process until the end of the year. Gravity receiver have shown that over the course of two years (2023-2024) the matter of space-time has increased its mass in the volume of the Earth by 0.045%. Consequently, the distances between the Earth and the Sun, as well as between the Earth and the Moon have decreased according to Newton's law of interaction of masses of matter and the satellites lowered their orbits

Suggested Citation:

Landin V, Sluginov E, Sluginova A, Sluginova O. The matter of space-time has increased its density and mass in the zone of the Earth. *Sci Herald Uzhhorod Univ Ser Phys.* 2024;(56):2817-2823.

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The torques of gravity along the Earth's meridian varied in a wave-like manner during the study period. There were months with insignificant changes and months when the torques varied widely. This was primarily true for 2024, when they increased from 0.07 Nmm to 1.6 Nmm. It was theoretically proven that, based on the formula of the gravitational constant, it is possible to determine the diameter of the spacetime matter, which cannot be measured by any means. For this, it is necessary to determine the density of spacetime in the area of the Voyager-1 spacecraft using a gravity receiver. According to preliminary calculations, it should be close to the value of 10^{-26} kg/m³. Gravity receivers installed in parallel, at an angle of 180°, synchronously show changes in the torsional moments of gravity, as if they were connected by a solid axis. This suggests that the gravity wave has the shape of a spiral emanating from the centre of the Earth.

Conclusions. The conducted studies have shown that gravitational receivers are reliable and accurate devices for studying the properties of space-time matter and gravity in the latitude and longitude of the Earth. Gravitational moments have been determined for the past years, in which they changed insignificantly, but in 2024 strong and accelerated increases were noted in latitude by 5.23 times and in the meridian by 22.86 times compared to 2022. Based on the numerical values of the gravitational torques, it is possible to determine the density of space-time matter, which in 2024 increased to 0.045%. At the same time, the mass of space-time also increased throughout 2024. Therefore, at the end of December 2024, 1 kg of material mass weighed 1000.45 g, if in 2022 it weighed 1,000,000 g on a spring scale. Therefore, the distance between the Earth and the Sun, as well as between the Earth, the Moon and the satellites, decreased during this year according to Newton's law on the interaction of masses of matter. At the same time, the speed of the Earth's rotation around its axis increased.

Keywords: gravity; space; time; gravity receiver

Introduction

For more than three thousand years, humankind has been performing various tasks with a lever. Ancient Greek scientists were looking for a fulcrum to lift the Earth. But no one since Pythagoras has ever noticed or guessed that this tool can pick up gravitational and electromagnetic waves when placed on a sharp support with shoulders of different lengths. Based on this, a gravity receiver was designed that is sensitive to the slightest changes in the density of spacetime matter and micron-scale changes in the torques of the gravitational field and the electromagnetic field [1, 2]. Over the past years, studies have shown that the torques of the gravitational matter of spacetime are 19.1 times greater than the torques of the Earth, i.e., it dominates the Earth's zone [3, 4]. The detected torques are constantly changing in a wave-like manner. This suggests that the density of spacetime matter and the magnitude of the gravitational force in the Earth's zone are not stable. The preliminary numerical values of the gravitational torques of the Earth, the Moon, the Sun, and the Black Hole of the Milky Way were determined. The torques in the latitude of the Earth are 2.1 times greater than in the longitude [5, 6]. In previous years, the levers of the gravity receivers returned to their starting point within a year, but presently the picture changed towards an increase in the duration of large torques. Over the past years, gravity receivers have repeatedly recorded gravity vortices and powerful gravity waves called "tsunamis" [7, 8]. It has been theoretically proven gravity is a stabilizer of the transformation of the mater of space into the mater of time during its expansion and back during compression.

Determination of the diameter of space-time matter

Based on the well-known formula for the gravitational constant [1] (1):

$$G = \frac{1}{\rho_{st} \times t^2} = \frac{c^2}{\rho_{st} \times D^2} = \text{constant}, \quad (1)$$

where ρ_{st} is the space density, kg/m³; t is the space time, s; c is the speed of light, m/s; D is the spacetime diameter, m.

The following constant can be found (2):

$$\rho_{st} \times D^2 = \frac{c^2}{G} = 1.35 \times 10^{27} = \text{constant} \quad (2)$$

and the spacetime diameter (3):

$$D = \sqrt{\frac{1.35 \times 10^{27}}{\rho_{st}}} m. \quad (3)$$

The diameter of spacetime cannot be determined experimentally, but the density of spacetime can be determined using gravity receivers installed on the Earth, Moon, Mars, and on the Earth's satellite, relative to the density in the area of the Voyager-1 spacecraft. Such an experiment is within the capabilities of a space power. If the density of spacetime in the solar system is known, then it can be proved that dark matter is spacetime matter.

If a gravity receiver is placed on a spacecraft such as Voyager-1, the density of spacetime can be determined as the spacecraft moves away from the solar system [9, 10]. Where Voyager-1 is currently located, according to preliminary calculations, the density of spacetime should be close to 10^{-26} kg/m³. To register it, the length of the gravity receiver arm must have the maximum length that can be put into Earth orbit by space rockets [11]. Therewith, the gravity receiver must be equipped with a light beam that increases the scale of the angle of rotation of the lever. Knowing the density of spacetime in deep space, where there is no baryonic matter nearby, it is possible to determine the density in the area of the Earth, the Sun, and the area of other planets, as well as the diameter of the spacetime where we all live, proportionally to this value [12]. The density of spacetime can be used to determine its mass in the Earth zone, in the solar system zone, and in the Milky Way zone.

Gravitational torques at latitude 50°55'N

In 2023-2024, the gravity receiver determined the gravitational torques, which showed that the spacetime density changes slightly in some months, and rapidly and by a significant amount in others. For instance, in January 2024 (Figure 1), the torques increased by only 0.01 Nmm.

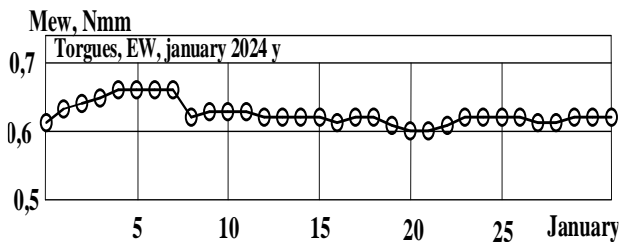


Figure 1. Changes in gravitational torques at latitude 50°55' N in January 2024.

In other months, for example, in October this year, torques increased by 0.47 Nmm from 2.51 Nmm to 2.98 Nmm (Figure 2). This is 4.7 times more than in January 2024.

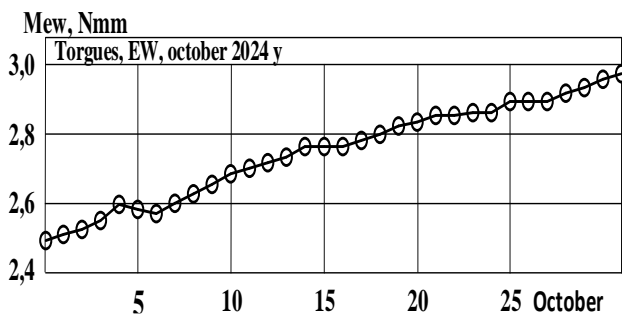


Figure 2. Changes in gravitational torques at latitude 50°55' N in October 2024.

The general picture of changes in gravity torques at latitude 50°55' N over the past 4 years is presented in Figure 3. As the graph demonstrates, starting in February 2023, gravity torques were increasing at an accelerated rate for two consecutive years. From a point of minus 0.16 Nmm in December 2022 to the end of 2024, they reached 3.4 Nmm. This figure indicates that the mass and density of spacetime in the globe's zone were also increasing.

Studies using a gravity receiver show that the torsional moments of gravitational waves and the mass of spacetime vary widely from year to year.

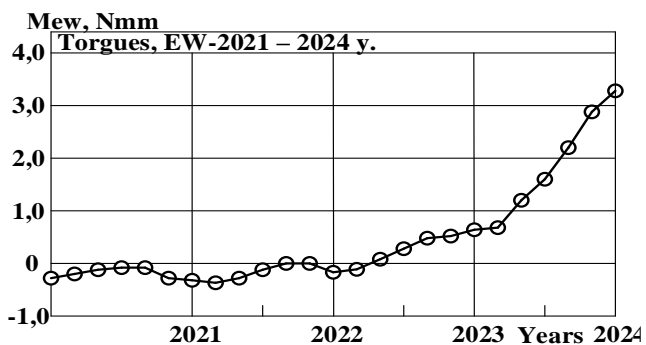


Figure 3. Changes in gravitational torques at latitude 50°55' N during 2021–2024.

According to the authors of this study, the change in gravitational torques depends on the mass and density of spacetime matter in the Earth zone. If the density increases, then the mass of spacetime matter increases, which increases the gravitational force of the load of the short part of the lever of the gravity receiver more than the long part

of the lever according to Newton's law of the interaction of masses of matter, because the mass of the short part of the lever is 4.6 times greater than the mass of its long part.

It is known from school that in the acceleration field of a gravity receiver, the position of the lever relative to the horizontal does not change. However, in the field of gravity, the density of spacetime and its mass change every second, which attracts the heavier part of the lever of the gravity receiver more strongly than the lighter part, according to Newton's law of gravity [8]. Therefore, in the field of gravity, the gravity receiver displays not only the torques of gravity, but also the corresponding spacetime density and its mass at a given moment in time.

Determination of the spacetime gravity waveform

Until now, there was no concept of what a gravitational wave of spacetime is, t.i., what form it has. In the literature, it is presented as a wave on the water surface without any evidence. Therefore, an attempt was made to determine its appearance using several gravity receivers. Initially, two gravity receivers were used for the experiments. They were located parallel to each other. One gravity receiver was installed along the latitude of the Earth in the East-West direction, while the other in the opposite West-East direction. The angle between them was 180 degrees. Figure 4 presents them working together along latitude 50°55'N.

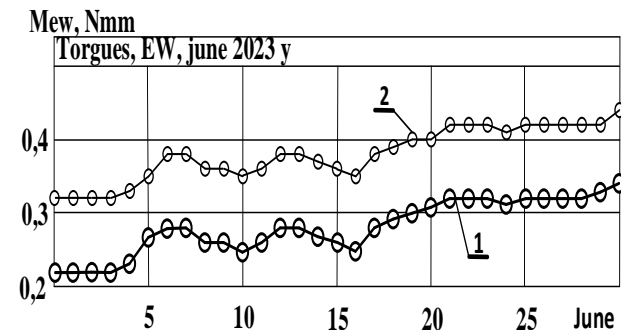


Figure 4. Changes in gravity torques at two parallel gravity receivers in June 2023, (latitude 50°55'N).

Note: 1 – the gravity receiver located in the East-West direction; 2 – the gravity receiver located in the West-East direction; 3 – the angle between the gravity receivers is 180°.

The main curve (1) and the supplementary curve (2) are mirrored. This indicates that the shape of the spacetime gravity wave is a spiral emanating from the centre of the Earth.

Changes in gravitational torques at the Earth's meridian 34°48'E.

Along the Earth's longitude, the Earth's torques also changed slightly in some months, for example, in March 2024 (Figure 5). They increased and decreased by a certain amount during the month, but they started with zero and ended with zero.

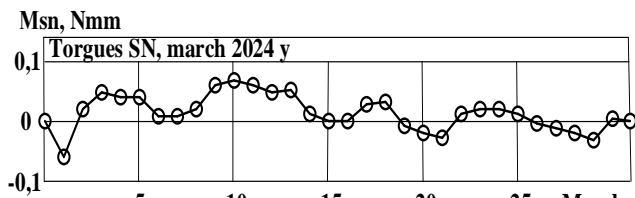


Figure 5. Changes in gravitational torques at the 34°48'E meridian in March 2024.

In other months, the gravity torques increased by a greater amount. For instance, in September 2024 (Figure 6), they increased from 1.15 Nmm to 1.37 Nmm, i.e., by 0.22 Nmm.

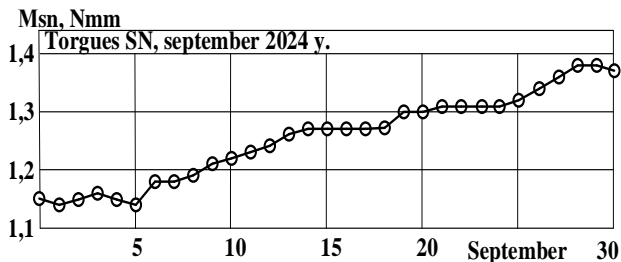


Figure 6. Changes in gravitational torques at the Earth's longitude 34°48'E in September 2024.

The general picture of the change in gravitational torques along the 34°48' E meridian over the past 4 years is presented in Figure 7. As the graph demonstrates, starting in October 2023, the gravitational torques increased at an accelerated rate for more than a year. From a point of minus 0.2 Nmm in October 2023, they reached a value of 1.6 Nmm by the end of 2024. This figure shows that the density of spacetime in the Earth's zone also increased. Consequently, the mass of spacetime in the volume of the globe increased as well.

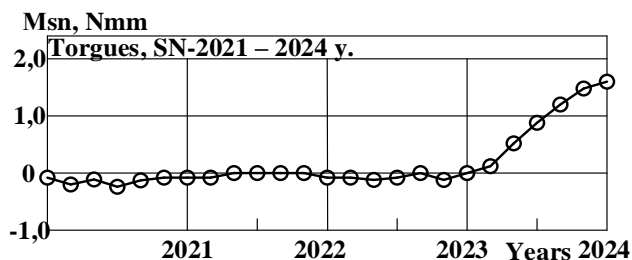


Figure 7. Changes in gravitational torques along the Earth's meridian 34°48'E over four years.

To date, the reason why the torsional moments of gravity along the Earth's meridian are 2.1 times less than

along the latitude and why their beginning of increasing values of moments was delayed by one year has not been explained.

Conclusions

1. The long-term use of gravitational receivers in studying the properties of space-time has shown their efficiency, reliability, high sensitivity and accuracy. They respond subtly to changes in the gravitational torques associated with the mass and density of the matter of space-time. The lever of the gravitational receiver changes the angle of inclination relative to the horizontal due to changes in the mass and density of the matter of space-time.

2. Gravitational receivers showed that in two years (2023-2024) the matter of space-time increased its mass in the volume of the Earth by 0.045%. Consequently, the distances between the Earth and the Sun, as well as between the Earth and the Moon, decreased according to Newton's law on the interaction of matter masses, and the satellites lowered their orbits. At the same time, the speed of the Earth's rotation around its axis increased.

3 It has been theoretically proven that the diameter of space-time matter can be determined if only one quantity is known – the density of space-time in outer space where there is no massive baryonic matter nearby, for example, in the area of the Voyager 1 spacecraft.

4. It has been experimentally proven that the wave form of gravity of space-time matter is a spiral emanating from the center of the Earth.

5. Gravitational moments at 50°55' N reached 3.4 Nmm in 2024. This means that the matter of space-time increased its mass and density in the volume of the globe by 0.045%. Therefore, at the end of December 2024, 1 kg of material mass weighed 1000.45 g, if in 2022 it weighed 1,000,000 g on a spring scale.

6. Gravitational moments along the Earth's meridian 34°48' E increased to 1.6 Nmm in 2024. The reason why these gravitational moments are on average 2.1 times smaller than at the Earth's latitude is still unclear.

7. If the density of space-time in the solar system is known, then it can be proven that dark matter is the matter of space-time.

Acknowledgements

There are none.

Conflict of Interest

There are none.

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Матерія простору-часу збільшила свою щільність та масу в зоні Землі

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Анотація

Актуальність. Актуальність даного дослідження полягає у пропозиції нового підходу до вимірювання та аналізу ефектів гравітаційних сил матерії простору-часу вперше у світі з використанням приймачів гравітації. Дослідження представило нове розуміння складних взаємодій між гравітацією, щільністю та масою матерії простору-часу вздовж широти та меридіана Землі, які були вперше виміряні приймачами гравітації.

Мета. Метою даної роботи було вивчення властивостей гравітаційного поля простору-часу залежно від його широти та довготи, а також визначення форми гравітаційної хвилі на поверхні Землі. Для цього були сконструйовані гравітаційні приймачі, що є важелями з плечами різної довжини, встановлені на гострій опорі. Один гравітаційний приймач розташовувався вздовж широти Землі у бік схід-захід, а інший — вздовж меридіана у південний-північ.

Методологія За допомогою цих двох гравітоприймачів можна спостерігати зміну положення важелів щодо горизонту в залежності від величини гравітаційних моментів, пов'язаних із змінами щільності простору-часу за широтою та довготою на поверхні Землі. Особливістю гравітоприймачів є те, що вони можуть обертатися на певний кут без тертя на гострій опорі і дуже чутливі до мікроскопічних змін маси та щільності простору-часу в обсязі земної кулі.

Результати. Моменти гравітації простору-часу, що діють вздовж широти Землі, деякі місяці змінюються незначно, але в інші місяці вони змінюються сильно. Це особливо актуально для 2024 року, коли крутильні моменти збільшилися з 0,65 Нмм до 3,4 Нмм. Це пояснюється тим, що маса та щільність простору-часу почали збільшуватися в обсязі Землі у квітні 2023 року та планомірно продовжували цей процес до кінця поточного року. Гравітаційні приймачі показали, що за два роки (2023-2024) матерія простору-часу збільшила свою масу обсягом Землі на 0,045%. Отже, відстані між Землею та Сонцем, а також між Землею та Місяцем скоротилися згідно із законом Ньютона про взаємодію мас матерії, а супутники знизили свої орбіти. Моменти сили тяжіння вздовж меридіана Землі в період змінювалися хвилеподібно. Були місяці з незначними змінами та місяці, коли моменти сили змінювалися в широких межах. Насамперед це стосувалося 2024 року, коли вони збільшилися з 0,07 Нмм до 1,6 Нмм. Теоретично доведено, що на основі формули гравітаційної постійної можна визначити діаметр матерії простору-часу, який неможливо виміряти жодними засобами. Для цього необхідно за допомогою гравітаційного приймача визначити густину простору-часу в районі космічного корабля «Вояджер-1». За попередніми розрахунками вона має бути близька до значення 10^{-26} кг/м³. Гравітаційні приймачі, встановлені паралельно, під кутом 180°, синхронно показують зміни крутильних моментів сили тяжіння, якби вони були з'єднані твердою віссю. Це говорить про те, що гравітаційна хвиля має форму спіралі, що виходить із центру Землі.

Висновки. Проведені дослідження показали, що гравітаційні приймачі є надійними та точними приладами для вивчення властивостей матерії простору-часу та гравітації за широтою та довготою Землі. Визначено гравітаційні моменти за минулі роки, в яких вони змінювалися незначно, але у 2024 році відзначено сильні та прискорені збільшення за широтою у 5,23 рази та за меридіаном у 22,86 рази порівняно з 2022 роком. За чисельними значеннями гравітаційних моментів, що крутять можна визначити густину матерії простору-часу, яка у 2024 році збільшилася до 0,045%. Тому маса простору-часу також збільшувалася протягом усього 2024 року. Отже, в кінці грудня 2024 1 кг маси матеріалу важив 1000,45 г, якщо в 2022 він важив 1000 000 г на пружинних вагах. Отже,

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відстань між Землею та Сонцем, а також між Землею, Місяцем та супутниками зменшувалась протягом цього року згідно із законом Ньютона про взаємодію мас матерії. У цьому швидкість обертання Землі навколо своєї осі збільшилася.

Ключові слова: гравітація; простір; час; гравітоприймач